

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen


2018

Test 2200: Case IH Farmall 70A

Nebraska Tractor Test Laboratory

University of Nebraska-Lincoln, tractortestlab@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>

 Part of the [Energy Systems Commons](#), [History of Science, Technology, and Medicine Commons](#), [Other Mechanical Engineering Commons](#), [Physical Sciences and Mathematics Commons](#), [Science and Mathematics Education Commons](#), and the [United States History Commons](#)

Laboratory, Nebraska Tractor Test, "Test 2200: Case IH Farmall 70A" (2018). *Nebraska Tractor Tests*. 2638.

<https://digitalcommons.unl.edu/tractormuseumlit/2638>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

NEBRASKA TRACTOR TEST 2200

CASE IH FARMALL 70A DIESEL

8 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—545 rpm)					
56.93 (42.46)	2599	4.41 (16.71)	0.543 (0.330)	12.90 (2.54)	Fuel used during active exhaust regeneration - na (see note 1 page 2)
Standard Power Take-off Speed(540 rpm)					
56.33 (42.01)	2576	4.33 (16.38)	0.538 (0.327)	13.01 (2.56)	

VARYING POWER AND FUEL CONSUMPTION

56.93 (42.46)	2599	4.41 (16.71)	0.543 (0.330)	12.90 (2.54)	Air temperature
49.44 (36.87)	2652	4.03 (15.27)	0.571 (0.347)	12.25 (2.41)	72°F (22°C)
37.41 (27.89)	2676	3.35 (12.68)	0.627 (0.381)	11.16 (2.20)	Relative humidity
25.06 (18.69)	2697	2.62 (9.93)	0.733 (0.446)	9.55 (1.88)	66%
12.44 (9.28)	2712	2.00 (7.58)	1.127 (0.685)	6.21 (1.22)	Barometer
0.45 (0.34)	2722	1.45 (5.48)	22.332 (13.584)	0.31 (0.06)	28.69"Hg (97.14 kPa)

Maximum Torque - 155 lb.-ft. (211 Nm) at 1802 rpm
Maximum Torque rise - 35.1%
Torque rise at 2080 engine rpm - 23%

TRACTOR SOUND LEVEL WITHOUT CAB

	Front Wheel Drive Engaged	Disengaged
At no load in 3rd (L3) gear	92.5	92.6
Bystander in 8th (H4) gear		82.7

Horizontal distances of drawbar hitch point behind rear wheel axis - 27.6" (700 mm), 31.5" (800 mm)

TIRES AND WEIGHT

Rear Tires—No., size, ply & psi (kPa)
Front Tires—No., size, ply & psi (kPa)
Height of Drawbar
Static Weight with operator—Rear
— Front
— Total

Tested Without Ballast

Two 18.4-24; 8:18 (125)
Two 12.5/80-18; 10; 28 (195)
18.0 in (455 mm)
2895 lb (1313 kg)
2175 lb (987 kg)
5070 lb (2300 kg)

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln Nebraska 68583-0832

Dates of tests: August 28 to September 5, 2018

Manufacturer: CNH Ind India Private LTD Plot No. 3, Udyog Kendra, Greater Noida India

FUEL, OIL and TIME: Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8404 Fuel weight 6.998 lbs/gal (0.839 kg/l) Oil SAE 10W40 API service classification CJ-4 Transmission and hydraulic lubricant Case IH Akcela Nexple fluid Front axle lubricant Case IH Akcela Nexple fluid Total time engine was operated 7.5 hours

ENGINE: Make FCA Diesel Type three cylinder vertical with turbocharger and air to air intercooler Serial No. 50D01977 Crankshaft lengthwise Rated engine speed 2600 Bore and stroke 3.701" x 4.213" (94.0 mm x 107.0 mm) Compression ratio 17.5 to 1 Displacement 136 cu in (2228 ml) Starting system 12 volt Lubrication pressure Air cleaner two paper elements Oil filter one full flow cartridge Fuel filter one paper element Fuel cooler radiator for pump return fuel Exhaust regenerative aftertreatment system consisting of DOC (diesel oxidation catalyst) and DPF (diesel particulate filter) integrated within an underhood muffler with horizontal exhaust to the right side Cooling medium temperature control thermostat and variable speed fan

ENGINE OPERATING PARAMETERS: Fuel rate: 29.2 - 31.0 lb/h (13.2 - 14.1 kg/h) High idle: 2700 - 2800 rpm Turbo boost: nominal 16.0 - 18.9 psi (110 - 130 kPa) as measured 16.8 psi (116 kPa)

CHASSIS: Type front wheel assist Serial No. FR5328108 Tread width rear 56.5" (1435 mm) front 60.0" (1525 mm) Wheelbase 77.2" (1960 mm) Hydraulic control system direct engine drive Transmission selective gear fixed ratio Nominal travel speeds mph (km/h) first 1.83 (2.94) second 2.75 (4.43) third 4.07 (6.55) fourth 5.60 (9.01) fifth 6.64 (10.68) sixth 10.00 (16.09) seventh 14.76 (23.75) eighth 20.31 (32.68) reverse 1.93 (3.11), 2.91 (4.69), 4.30 (6.92), 5.92 (9.52), 7.02 (11.29), 10.56 (17.00), 15.60 (25.10), 21.46 (34.53) Clutch single dry disc operated by foot pedal Brakes single wet disc operated by two foot pedals which can be locked together Steering hydrostatic Power take-off 540 rpm at 2575 engine rpm Unladen tractor mass 4895 lb (2220 kg)

HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: None

OECD Static test

Maximum force exerted through whole range: 2705 lbs (12.0 kN)(at frame)
3608 lbs (16.0 kN)(at link ends)

two outlet sets combined

i) Sustained pressure of the open relief valve: 2577 psi (178 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed: 11.2 GPM (42.3 l/min)

iii) Pump delivery rate at maximum hydraulic power: 10.9 GPM (41.2 l/min)

Delivery pressure: 2013 psi (139 bar)

Power: 12.8 HP (9.5 kW)

single outlet set

ii) Pump delivery rate at minimum pressure and rated engine speed: 11.1 GPM (42.0 l/min)

iii) Pump delivery rate at maximum hydraulic power: 11.0 GPM (41.6 l/min)

Delivery pressure: 1990 psi (137 bar)

Power: 12.7 HP (9.5 kW)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

NOTE 1: The engine in this tractor has a automatic control for the regeneration process that could not be manually overridden. This test sequence was not done.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. This tractor fell 8.9% short of meeting the manufacturer's PTO power claim of 62.5 hp (46.0 kW) and 6.2% short of meeting the manufacturer's remote hydraulic flow claim of 11.9 GPM (45 lpm).

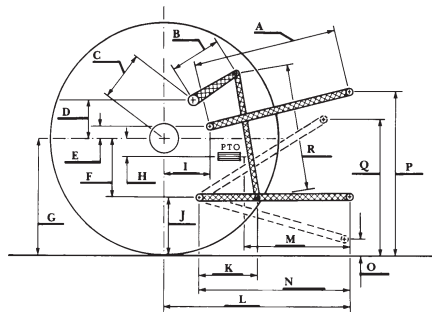
We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2200**, September 18, 2018.

Roger M. Hoy
Director

M.F. Kocher
P.J. Jasa
J.D. Luck
Board of Tractor Test Engineers

HITCH DIMENSIONS AS TESTED - NO LOAD

	inch	mm
A	26.8	680
B	9.1	230
C	1.6	40
D	1.1	28
E	15.2	385
F	5.9	150
G	25.6	650
H	0.6	14
I	7.2	183
J	19.7	500
K	13.6	345
L	34.8	885
M	21.7	551
N	30.1	765
O	9.1	230
P	43.7	1110
Q	35.4	900
R	19.5	495



RECOMMENDED CITATION FORMAT:

NTTL.(2018). Nebraska Tractor test 2200 for Case IH Farmall 70A Diesel.

Lincoln, NE:Nebraska Tractor Test Laboratory. Retrieved from <http://tractortestlab.unl.edu>



Case IH Farmall 70A Diesel

Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln